

REMARKS

Claims 1-6 remain in this application. Claims 1-6 are amended herein to clarify the subject matter of the invention and to remove improper dependencies.

In light of the foregoing, it is respectfully submitted that the application is in proper form for allowance of all claims and notice to that effect is earnestly solicited.

Respectfully submitted,

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APPENDIX I

**AMENDED CLAIMS WITH AMENDMENTS INDICATED THEREIN
BY BRACKETS AND UNDERLINING**

1. (Amended) A maraging steel [excellent in fatigue characteristics which has] comprising:

a chemical composition consisting essentially of, in % by weight:

C: 0.01% or less,

Ni: 8-19%,

Co: 8-20%,

Mo: 2-9%,

Ti: 0.1-2%,

Al: 0.15% or less,

N: 0.003% or less,

O: 0.0015% or less,

and the balance Fe; and

the Ti component segregation ratio and the Mo component segregation ratio in its structure of 1.3 or less each.

2. (Amended) A process for producing a maraging steel [excellent in fatigue characteristics which comprises] comprising the steps of:

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melting a steel with the composition as described in Claim 1;
casting the molten steel to obtain a steel ingot;
hot forging the steel ingot at a forging ratio of at least 4 for a forged piece;
then submitting to soaking treatment by keeping the forged piece one or more times at a temperature range of 1100-1280°C for a total hot holding time of 10-100 hours; and
then plastic working the forged piece.

3. (Amended) A maraging steel [excellent in fatigue characteristics which has] comprising:

a chemical composition consisting essentially of, in % by weight:

C: 0.01 % or less,

Ni: 8-19%,

Co: 8-20%,

Mo: 2-9%,

Ti: 0.1-2%,

Al: 0.15% or less,

N: 0.003% or less,

O: 0.0015% or less ,

and the balance Fe; and



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[contains] a nonmetallic inclusion [in its structure] having a size of 30 μm or less when the size of the nonmetallic inclusion is expressed by the diameter of a corresponding circle taking the circumferential length of the nonmetallic inclusion to be the circumference of the corresponding circle.

4. (Amended) [A] The maraging steel [excellent in fatigue characteristics] as set forth in Claim 3, [further which has] wherein the Ti component segregation ratio and the Mo component segregation ratio in its structure is of 1.3 or less each.

5. (Amended) A process for producing a maraging steel [excellent in fatigue characteristics which comprises] comprising the steps of;

melting a steel [with the] having the chemical composition as described in Claim 3;

casting the molten steel to obtain a steel ingot of a taper $T_p = (D_1 - D_2) \times 100/H$ of 5.0-25.0%, a height-diameter ratio $R_h = H/D$ of 1.0-3.0, and a flatness ratio $B = W_1/W_2$ of 1.5 or less, taking the diameter of a corresponding circle with a circumference corresponding to the circumferential length of the top of the steel ingot as D_1 , the diameter of a corresponding circle with a circumference corresponding to the circumferential length of the bottom of the steel ingot as D_2 , the height of the steel ingot as H , the diameter of a corresponding circle with a circumference corresponding to the circumferential length of the steel



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ingot at a location of $H/2$ as D , and the length of the long side and length of the short side of the steel ingot at a location of $H/2$ as $W1$ and $W2$, respectively; and

plastic working the steel ingot to make the size of a nonmetallic inclusion in the steel be $30\text{ }\mu\text{m}$ or less when the size of the nonmetallic inclusion is expressed by the diameter of a corresponding circle taking the circumferential length of the nonmetallic inclusion to be the circumference of the corresponding circle.

6. (Amended) A process for producing a maraging steel [excellent in fatigue characteristics which comprises] comprising the steps of;

melting a steel [with the] having:

a chemical composition [as described in Claim 3;]

consisting essentially of, in % by weight:

C: 0.01 % or less,

Ni: 8-19%,

Co: 8-20%,

Mo: 2-9%,

Ti: 0.1-2%,

Al: 0.15 % or less,

N: 0.003 % or less,

O: 0.0015 % or less,



and the balance Fe; and

a nonmetallic inclusion having a size of 30 μm or less when the size of the nonmetallic inclusion is expressed by the diameter of a corresponding circle taking the circumferential length of the nonmetallic inclusion to be the circumference of the corresponding circle;

[casting the molten steel to obtain a steel ingot with the taper T_p , the height-diameter ratio R_h , and the flatness ratio B as described in Claim 5;]

— casting the molten steel to obtain a steel ingot of a taper $T_p = (D_1 - D_2) \times 100/H$ of 5.0-25.0%, a height-diameter ratio $R_h = H/D$ of 1.0-3.0, and a flatness ratio $B = W_1/W_2$ of 1.5 or less, taking the diameter of a corresponding circle with a circumference corresponding to the circumferential length of the top of the steel ingot as D_1 , the diameter of a corresponding circle with a circumference corresponding to the circumferential length of the bottom of the steel ingot as D_2 , the height of the steel ingot as H , the diameter of a corresponding circle with a circumference corresponding to the circumferential length of the steel ingot at a location of $H/2$ as D , and the length of the long side and length of the short side of the steel ingot at a location of $H/2$ as W_1 and W_2 , respectively;

forging the steel ingot at a forging ratio of at least 4 for a forged piece;

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then submitting to soaking treatment by keeping the forged piece one or more times in a temperature range of 1100-1280°C for a total hot holding time of 10-100 hours; and

then plastic working the forged piece to make the size of a nonmetallic inclusion in the steel be 30 μm or less when the size of the nonmetallic inclusion is expressed [as described in Claim 5] by the diameter of a corresponding circle taking the circumferential length of the nonmetallic inclusion to be the circumference of the corresponding circle.

